



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,027	11/07/2001	Yoichi Oikawa	826.1768	4751

21171 7590 04/23/2003

STAAS & HALSEY LLP  
700 11TH STREET, NW  
SUITE 500  
WASHINGTON, DC 20001

EXAMINER

ALLEN, DENISE S

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/986,027

Applicant(s)

OIKAWA, YOICHI

Examiner

Denise S Allen

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION*****Drawings***

Figures 1A – 1C should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Objections***

Claim 5 is objected to because of the following informalities: the limitation “the mirror” (lines 13 and 15) is unclear because it could refer to either the former-stage mirror or the latter-stage mirror previously recited in claim 5. Suggested correction: replace the limitation “the mirror” with “the former-stage mirror”. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 4 – 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Lemoff et al (US 6,539,142).

Regarding claims 1, 6, and 9, Lemoff et al teaches an optical switch (Figure 3 reference 40), comprising: a mirror (reference 46), an inclination angle of which varies depending on an application voltage (column 5 lines 55 – 57); a driver device (reference 52) applying the

Art Unit: 2872

application voltage to the mirror; an oscillation device (reference 64) generating an additional signal of a prescribed frequency (column 6 lines 36 – 40); a superimposition device (reference 64) superimposing the additional signal on the application voltage; a detection device (reference 62) detecting a signal component of the prescribed frequency from light (reference 58) reflected on the mirror; and a control device (reference 62) controlling the application voltage based on the detected signal component (column 6 lines 40 – 42).

Regarding claims 4 and 7, Lemoff et al teaches an optical switch as described above and further teaches an inclination angle in a second direction of the mirror which varies depending on a second application voltage (column 6 lines 42 – 46); a second driver device (reference 52) applying the second application voltage to the mirror; a second oscillation device (reference 64) generating a second additional signal of a second frequency (column 6 lines 36 – 40 and 42 – 46); a second superimposition device (reference 64) superimposing the second additional signal on the second application voltage; the detection device detecting signal components of the second frequency from light (reference 58) reflected on the mirror; and a second control device (reference 62) controlling the second application voltage based on the detected signal component of the second frequency (column 6 lines 40 – 46).

Regarding claims 5 and 8, Lemoff et al teaches an optical switch as described above wherein the mirror described is a former-stage mirror. Lemoff et al further teaches a latter-stage mirror (reference 48), an inclination angle in a third direction of which varies depending on a third application voltage and an inclination angle in a fourth direction of which varies depending on a fourth application voltage (column 6 lines 42 – 46); a third driver device (reference 53) applying the third application voltage to the latter mirror; a fourth driver device (reference 53)

Art Unit: 2872

applying the fourth application voltage to the latter mirror; a third superimposition device (reference 64) superimposing the third additional signal on the third application voltage; a fourth superimposition device (reference 64) superimposing the fourth additional signal on the fourth application voltage; a detection device (reference 62) detecting respective signal components of the third and fourth frequencies from light (reference 58) reflected on the latter-stage mirror; and a third control device (reference 64) controlling the third application voltage based on the detected signal component of the third frequency (column 6 lines 40 – 46); and a fourth control device (reference 64) controlling the fourth application voltage based on the detected signal component of the fourth frequency (column 6 lines 40 – 46).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lemoff et al.

Lemoff et al teaches an optical switch as described above. Lemoff et al does not teach a storage device storing at least one of information about the application voltage and information about optical-coupling efficiency of the optical switch; and a notification device notifying a prescribed notification addressee of the information stored in the storage device.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a computer with a storage device (memory) and a notification device (monitor) connected

Art Unit: 2872

to the control device of the optical switch of Lemoff et al in order to record and monitor the performance of the optical switch over time.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lemoff et al in view of Neukermans et al (US 6,445,844).

Lemoff et al teaches an optical switch as described above. Lemoff et al does not teach the oscillation device generates an additional signal of a frequency higher than a mechanical resonance frequency of said mirror.

Neukermans et al teaches using an oscillation signal with a frequency higher than the mechanical resonance frequency of a mirror (column 27 lines 34 – 37). Based on the teaching of Neukermans et al, it would have been obvious to one of ordinary skill in the art at the time of the invention to use an oscillation signal with a frequency higher than the mechanical resonance frequency of the mirror in the optical switch of Lemoff et al in order to reduce the optical switch's sensitivity to shock and vibration (Neukermans et al column 27 lines 41 – 43).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Denise S Allen whose telephone number is (703) 305-7407. The examiner can normally be reached on Monday - Friday, 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on (703) 308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Art Unit: 2872

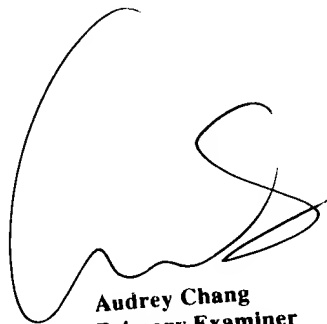
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Denise S Allen  
Examiner  
Art Unit 2872



dsa

April 18, 2003



**Audrey Chang**  
**Primary Examiner**  
**Technology Center 2800**